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**SUPPLEMENT TO
REPORT NO.**

THIS IS UNEVALUATED INFORMATION

SCIENTIFIC RESEARCH INSTITUTES OF HEAVY INDUSTRY

A. A. Armand, General Editor

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Scientific Divisions, Sections, and Laboratories

**Mining Geology
Technological
Agrochemical
Insectofungicides**

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Planning, Technical, and Economic**Sectors**

Geological Prospecting
Mining
Project
Dressing
Phosphate - Thermal
Phosphate - Acid
Nitrogen and Complex Fertilizers
Phosphor Fertilizers
Potash and Organic Mineral Fertilizers
Field Experiments

Laboratories

Petrographic
Physicochemical
Chemical
Organic and Mineral Fertilizers
Anticorrosion
Production Control
Analysis Procedure
Soil
Physiological
Microbiological
Microelements
Organic
Inorganic
Analytical
Entomological
Phytopathological

Leading Scientific Workers and Specialists**Mining and Geological Division**

Academician Pryanishnikov, D. N. - consultant
Honorary Academician Kablukov, I. A. - consultant
Prof Ilovayskiy, D. I. - in charge of paleontological laboratory
Prof Kazakov, A. V. - in charge of Mining and Geology Division
Prof Rebinder, P. A. - in charge of physicochemical laboratory
Docent Sheehko, Ye. V. - in charge of mining and project sector
Bushinskiy - in charge of petrographic laboratory
Gimmel'farb, B. M. - in charge of geological prospecting sector
Kurman, I. M. - in charge of boron group
Ul'yanov, M. S. - in charge of dressing sector
Rozanov, S. N. - in charge of chemical laboratory, Mining and Geology Division

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Fibeg, M. P. - in charge of appetite group

Fomin, M. A. - in charge of dressing shop of the experimental plant

Technology Division

Docent Pestov, M. Ye. - in charge of potash group

Docent Chapelevetskiy, M. L. - in charge of production control and analysis procedure sector

Belopol'skiy, A. P. - in charge of physicochemical work

Dragunov, S. S. - in charge of the organic and mineral fertilizer laboratory

Dubovitskiy, A. M. - in charge of the nitrogen and complex fertilizers sector

Lider, Ye. E. - consultant of the nitrogen sector

Levi, B. I. - in charge of the urea sector

Nikolayevskiy, Ye. Ya. - chief engineer of the experimental plant

Postnikov, M. N.

Rize, D. F. - in charge of the phosphorus salt shop

Rosler V. B. - in charge of the sector for acid treatment of phosphates

Saradzhev G. S. - in charge of the thermal shop

Sokolovskiy A. A.

Sokolovskiy B. A.

Filipenko, M. A. - in charge of the anticorrosion group

Shereshevskiy A. I. - in charge of the phosphates heat treatment sector

Agrochemistry Division

Prof Drushinin, D. V. - in charge of the phosphate fertilizer sector

Prof Periturin, F. T. - consultant

Prof Remezov, M. P. - in charge of the soil science laboratory

Prof Smirnov, A. I. - in charge of the plant physiology laboratory

Askinazi, D. L.

Akhromeyko, A. I.

Bel'skiy V. P. - in charge of the field experiment sector

Vlasova, V. M. - in charge of the Lyubertsy experimental area; agriculturist

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Germanov, F. N. - in charge of microbiology laboratory

Gurevich, S. M. - in charge of Grakovo experimental field; agronomist

Kargopol'tsev, N. Ye. - in charge of the division and of the potash fertilizer group

Katalynov, M. V.

Koshel'kov, P. N.

Loginova, Z. V. - in charge of the organic and mineral fertilizer sector

Ratner, I. Yu.

Sokolov, A. V. - in charge of the nitrogen and complex fertilizer sector

Smirnov, N. D.

Turchin, F. V. - in charge of the nitrogen fertilizer group

Shcherba, S. V.

Khalizev, A. A. - in charge of the microelement laboratory

Insectofungicide Division

Docent Mezmayanov, A. N. - in charge of organic laboratory

Docent Spitsyn, N. I. - in charge of analytical laboratory

Vasil'yevskiy, A. P. - in charge of phytopathological laboratory

Veykher, I. S. - in charge of physicochemical laboratory

Goryainov, A. A. - in charge of testing sector

Kats, S. A. - in charge of inorganic laboratory

Manchev, V. P. - in charge of insectofungicide division

Pokrovskiy, Ye. A. - in charge of entomological laboratory

Pogov, P. V. - in charge of fumigant laboratory

Strachitskiy, K. N. - in charge of physiological laboratory

Planning and Economic Division

Dubov, P. I. - in charge of division

Experimental Plants and Installations of the Institute

Experimental plant at station of Ugreshskaya Station of the Moscow belt line.

Director - Vaskevich, Ts. A.

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Chief engineer - Nikolayevskiy, Ye. Ya.

Testing laboratory work of the institute on dressing and treating raw materials.

Capital outlay - 2,896,000 rubles.

Dolgoprudnyy Experimental Field (DOP) at Dolgoprudnyy Station, Savel

Senior agriculturist - Gerasimov, V. (in charge).

Tests action of fertilizers.

Capital outlay - 829,000 rubles.

Lyubertsy Experimental Area (LOU) at Lyubertsy Station. Moscow-Kaz
Railroad.

In charge - Vlasova, V. M.

Tests action of fertilizers.

Capital outlay - 61,800 rubles.

Graikovo Experimental Field, Graikovo SSR, Graikovo Oblast at Graikovo
Station.

Capital outlay - 52,400 rubles.

Experimental area at Kryukovo Station, Graikovo Railroad (branch of DOP)

Senior agriculturist - Gerasimov, S. V. (in charge).

Tests action of fertilizers.

Total number of workers - 1,392 (including experimental plant and fields).

Number of scientific workers - 248 (including experimental plant and
fields).

Annual budget - 8,411,700 rubles.

Chief Problems

Continuation of search and prospecting for phosphorites, aimed at new areas
which as yet have no raw materials of their own, e.g. DVO, Tadzhik SSR.

Continuation of search for boron, arsenic, and sulfur. In charge of pro-
specting parties: Gimmel'farb, B. M.

Planning of new or reconstruction of existing mines and dressing plants
for phosphorite and glauconite. In charge of planning section: Ul'yanov, M. S.

Chemical and petrographic study of phosphorites, using new methods
(selective flotation, selective peptization, X-rays, etc.) In charge of
Mining and Geology Division: Prof Kasakov A. Y.

Further study of new dressing methods (flotation, electromagnetic separa-
tion, etc.). In charge of experimental plant: Fomin, M. A.

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Realization of electrothermal phosphoric acid production on an industrial scale (experimental plant).

Obtaining definitive data on blast furnace sublimation of phosphorus for planning large plants (experimental plant).

Decomposition of phosphates with nitric acid in order to obtain double fertilizers. In charge: Rozler V. B.

Search for materials resistant to phosphoric acid. In charge: Filippenko, M. A.

Study of technological method of preparing urea. In charge: Levi, B. I.

Study of storage and transportation problems of certain types of fertilizer (ammonium nitrate, etc.). In charge: Dubovitskiy, A. M.

Technological production of phosphates. In charge: Berlin, L. Ye. and Zhushkov, Ye. N.

Study of the effect on plants of iron and aluminum phosphates and new organic and mineral fertilizers prepared from various coals and peats and further study of the action of stimulating substances. In charge: Periturin, F. T. and Loginova, Z.

Deeper study of effect of fertilizers on plant life. In charge: Prof Smirnov A. I.

Agrochemical study of amorphous, ammonitrophos, and other complex fertilizers. In charge: Sokolov, A. V.

Agrochemical study of phosphorite mill and plant production with the object of establishing phosphorite meal standard. In charge: Smirnov, N. D.

Study of ortho-, para- and meta- arsenical compounds of calcium, magnesium, lead and copper to establish which are the most toxic. In charge: Docent Nesmeyanov, A. N.

Synthesis of compounds analogous to rotenone. In charge: Docent Nesmeyanov, A. N.

Further work on preparation of spontaneous emulsions. In charge: Veykhkerts, I. S.

Study of sophora plant from point of view of insectofungicides. In charge: Nesmeyanov, A. N. and Goryainov, A. A.

Enterprises Systematically Served by the Institute

Mines:

Aktyubinsk, Vyatka group, Yegor'yevsk group, Polpinak, Shehigry

Grinding Installations and Dressing Factories

Polpinak and Shehigry grinding plants. Vyatka, Yegor'yevsk, Lopatino and Khibinogorsk dressing factories. Grinding departments of all superphosphate plants.

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Plants

Berezniki (nitrogen fertilizers), Stalinogorsk (nitrogen fertilizers),
 Vinnitsa (superphosphate), Voskresensk (phosphorus fertilizers and
 insectofungicides), Gorlovka (nitrogen fertilizers), Konstantinovka
 (superphosphate, insectofungicides), Leningrad (superphosphate), Odessa
 (superphosphate), Molotov (superphosphate) Solikamsk (potash salts),
 Khibinogorsk (phosphorus), Chernorechensk (phosphorus and nitrogen
 fertilizers), Shchelkovo (insectofungicides)

Foreign Institutions With Whom the Institute Maintains Contact**England**

Rothamsted Experimental Station, Harpenden, England.

Hungary

University of Technical Science, Budapest.

Germany

Die Landwirtschaftliche Hochschule, Berlin

Biologische Reichsanstalt für Land und Forstwirtschaft, Berlin-Dahlem.

Institut für Agricultural Chemie und Bakteriologie der Universität
 zu Breslau.

Landwirtschaftliche Akademie, Hohenheim.

Pflanzenbau, Institut der Universität zu Königsberg.

Italy

Fédération Internationale des Techniciens Agronomes, Rome.

L'Institut International d'Agriculture, Rome.

USA

Department of Agriculture, Bureau of Fertilizers, Washington.

Oregon State University, Agricultural College, Corvallis, Oregon.

University of Wisconsin, College of Agriculture, Madison, Wisconsin.

Agricultural Experimental Station, State of New Jersey, New Brunswick.

University of Minnesota, Department of Agriculture, Division of Soils,
 St Paul, Minnesota.

Czechoslovakia

Výzkumy Ústav Zemědělský, Brno Československá Akademie Zemědělská,
 Praha.

Státní Výzkumny Ústav pro výrobu rostlinový, Praha.

Univerzitní Landvirtschaftliche Versuchs, Station "Raadi" Tartu.

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Technical Assistance Provided to Industry by the Institute

1. Geology, Prospecting, and Mining of Ores of Agricultural Importance

State of prospecting and position as regards reserves of agrochemical ores throughout the USSR.

Geological characteristics of individual deposits of agrochemical ores; their quality, stratification, aquiferous properties, mining methods, and technical and economic assaying.

Prospecting for agrochemical ores, extension of existing sites, seeking deposits throughout the USSR and planning the workings.

Methods of mapping phosphorite seams and strata, accuracy of mapping in relation to the density of prospecting workings, metamorphic state of the seam and other geological conditions

Methods of estimating phosphorite reserves by overburden zones, individual interstratifications, etc.

Methods of sampling and dressing phosphorites and apatites; experiments on laboratory, field, and semiplant dressing.

Choice of dressing system for phosphorites and apatites at enterprises, types of grinding installations for small and large scale working, dressing apparatus.

Chemical analysis methods of agrochemical and fertilizers in prospecting parties and at enterprises.

Methods for topographical investigation of agrochemical ores.

Sinking of prospecting holes in quicksands.

Hard cable and twist drilling.

Choice of working systems (for mining agrochemical ores).

Open-cast and underground methods of mining agrochemical ores.

Excavation-operational methods in various soil conditions.

Technical and economical appraisal of deposits and determination of quality of agrochemical ores; complex utilization of agrochemical ores.

Carrying out topographical, underground surveying, and triangulation work at deposits.

Working out documentation of geological data during prospecting.

Mechanization of processes for underground mining of phosphorites.

Compilation of maps showing distribution of agrochemical ores for individual deposits, regions, oblasts, republics, and the USSR as a whole.

2. Fertilizer Technology

Acid treatment of phosphates (superphosphate, enriched and double superphosphate, ammonified superphosphate, extraction of phosphoric acid, precipitate, ammophos).

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Heat treatment of phosphates (electrical volatilization of phosphorus, blast-furnace volatilization of phosphorus, oxidation of phosphorus, preparation of phosphoric acid).

Preparation of simple and compound fertilizers on ammonium nitrate base.

Preparation of ammoniacal fertilizers (from gypsum, phosphogypsum, mirabilite, etc.).

Preparation of amide fertilizers (urea, carbamates, calcium cyanamide).

Preparation of various fertilizers containing magnesium.

Decomposition of phosphates with nitric acid and preparation of ammonitrophas.

Preparation of mixed fertilizers.

Improvement of the physical properties of fertilizers.

Preparation of organic and mineral fertilizers.

The science of staple commodities as applied to the investigation of fertilizers. Physicochemical methods of studying the properties of fertilizers.

Devising better and speedier methods of fertilizer analysis.

Devising control methods for fertilizer production.

Technical assistance to laboratories of the fertilizer industry.

Preparation of boric acid from latolite and tourmaline.

3. Agrochemical Properties of Fertilizers

Study and appraisal of those complex and concentrated fertilizers which are most suitable for production in the Soviet Union and also of individual types of phosphate, nitrogen, and potash fertilizers.

Establishment of agrochemical standards of mineral fertilizers produced and designated for production by the Soviet fertilizer industry.

Establishment of permissible (from the agrochemical standpoint) limits of impurities in fertilizers (iron phosphate and aluminum).

Selection of range of fertilizers to be produced by particular chemical enterprises, taking into account agricultural requirements, presence and character of raw material, state and development of transport, etc.

Establishment of the suitability of industrial waste and refuse for use as fertilizers.

Discovering agrotechnical methods for eliminating unfavorable features of certain fertilizers ("potazot," "chloraamoni").

Determination of the agronomical value and desirability of using secondary elements for plant feeding, the so-called stimulants (chlorine, magnesium, etc.).

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4. Insectofungicides

Production of arsenates and arsenites of calcium, sodium, copper, and lead.

Production of pure fluoric acid, fluorides, and silicofluorides.

Utilization of arsenical ores by leaching, firing, and chlorination methods.

Recovery of arsenic from waste gases.

Recovery of fluorine from waste gases.

Production of sulfur and compound preparations for control of agricultural pests.

Methods of preparing stable emulsions for control of agricultural pests.

Synthesis of organic insectofungicides.

Preparation of various vegetable poisons.

Technique of testing action of poisons on agricultural pests.

Publications

Monthly journal, Udobreniya i urozhay (Fertilizer and Harvest), published from 1929 to 1931.

A monthly journal, Mineral'nyye udobreniya i insektotsidny (Mineral Fertilizers and Insectofungicides), will be published in 1935. Editor in chief, Academician E. V. Britske. It is planned to print 3,000 copies. Subscription, 24 rubles.

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